

Claims

1. Method to change development of a plant or plant part compared to the wild-type plant or plant part, which method comprises increasing or decreasing expression in a plant or plant part of a *cdc27a* nucleic acid sequence and/or increasing or decreasing levels and/or activity in a plant of a CDC27A protein.
2. Method according to claim 1, wherein said increased or decreased *cdc27a* expression, CDC27A protein level or CDC27A protein activity, is effected by recombinant means and/or by chemical means.
3. Method according to claim 1 or 2, comprising introducing into a plant, a nucleic acid sequence capable of increasing or decreasing expression of a *cdc27a* gene and/or capable of increasing or decreasing activity and/or levels of a CDC27A protein.
4. Method according to 3, wherein said nucleic acid sequence is a *cdc27a* nucleic acid.
5. Method according to claim 4, wherein said nucleic acid is preferably from a dicotyledonous plant, further preferably from the family *Brassicaceae*, more preferably the nucleic acid sequence is from *Arabidopsis thaliana*, most preferably as represented by SEQ ID NO: 1 or 3 or a portion thereof or sequences capable of hybridising therewith, or a nucleic acid sequence encoding an amino acid sequence represented by SEQ ID NO: 2 or 4 or a homologue, such as a homologue having at least, 47%, 48%, 49%, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95% 98% , 99% sequence identity with SEQ ID NO 2, or a derivative or active fragment thereof.
6. Method according to any of claims 3 to 5, wherein said nucleic acid sequence is an allelic variant of a *cdc27a* nucleic acid sequence or wherein said CDC27A protein is encoded by an allelic variant.
7. Method according to any of claims 3 to 5, wherein said nucleic acid sequence is a splice variant of a *cdc27a* nucleic acid sequence or wherein said CDC27A protein is encoded by a splice variant.
8. Method according to any of claims 3 to 7, wherein said nucleic acid sequence is introduced in a sense direction into a plant.

9. Method according to any of claims 3 to 8, wherein expression of said nucleic acid is driven by a constitutive promoter.
- 5 10. Method according to any of claims 1 to 9, wherein said changed development is selected from changed differentiation, changed rate of development, changed organ formation, changed organ size and/or number, and/or changed reproductive characteristics, relative to the wild-type characteristics.
- 10 11. Method according to claim 10, wherein said changed differentiation is accelerated differentiation or wherein said changed rate of development is accelerated rate of development or wherein said changed organ formation is accelerated organ formation.
- 15 12. Method according to claim 10, wherein said changed organ size and/or number is increased organ size and/or number, such as increased number of leaves, increased number of flowers, increased number of seeds, increased size of the stem, increased size of the leaf or increased total biomass.
- 20 13. Method according to claim 10, wherein said changed reproductive characteristic is changed flowering characteristic, compared to the wild-type, such as an changed period of time to reach flowering, preferably early flowering, or such as increased number of flowers, increased number of seed pods, increased number of seeds.
- 25 14. Method for the production of a transgenic plant having changed development, compared to a wild-type plant of the same plant species, which method comprises:
- a. introducing into a plant, a nucleic acid sequence capable of increasing or decreasing expression of a *cdc27a* gene and/or capable of increasing or decreasing activity and/or levels of a CDC27A protein; and optionally
 - b. cultivating the plant cell under conditions promoting regeneration and mature plant growth.
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- 35 15. Method for generating plants having changed plant development, when compared to wild-type plants of the same plant species, which method comprises the steps of:
- a. Growing a plant with increased or decreased expression of a *cdc27a* nucleic acid sequence and/or having increased or decreased levels and/or activity of a CDC27A protein, when compared to the wild-type plants, and
 - b. Crossing said plant of (a) with a plant of interest; and
 - c. Producing progeny of the cross, and optionally

d. selecting said progeny with said changed development

16. A method according to any of claim 1 to 15, comprising the introduction into a plant of a construct comprising,

- (i) a nucleic acid sequence capable of increasing or decreasing expression of a *cdc27a* nucleic acid and/or capable of increasing or decreasing levels and/or activity of a CDC27A protein;
- (ii) one or more control sequence capable of regulating expression of the nucleic acid sequence of (i) in a plant; and optionally
- (iii) a transcription termination sequence.

17. Plant obtainable by a method according to any of claims 1 to 16, which plant has changed development, when compared to corresponding wild-type plants of the same species.

18. Plant having changed development when compared to the corresponding wild-type plant, wherein said plant has in at least one cell increased or decreased expression of a *cdc27a* nucleic acid sequence and/or has in at least one cell increased or decreased levels and/or activity of a CDC27A protein, when compared to a plant of the same plant species.

19. Plant according to claim 17 or 18, wherein said plant is a monocotyledonous plant, further preferably a cereal, and/or wherein said plant is selected from rice, maize, wheat, barley, millet, soybean, leguminosae, rapeseed, sunflower, canola, alfalfa, sugarcane, poplar, tobacco, and cotton.

20. Plant part, preferably a harvestable plant part, a propagule or progeny from a plant according to claim 17 to 19.

21. Genetic construct comprising,

- (iv) a nucleic acid sequence capable of increasing or decreasing expression of a *cdc27a* nucleic acid and/or capable of increasing or decreasing levels and/or activity of a CDC27A protein;
- (v) one or more control sequence capable of regulating expression of the nucleic acid sequence of (i) in a plant; and optionally
- (vi) a transcription termination sequence

22. Genetic construct according to claim 21, wherein said nucleic acid is a *cdc27a* nucleic acid, preferably from a dicotyledonous plant, further preferably from the family *Brassicaceae*, more preferably the nucleic acid sequence is from *Arabidopsis thaliana*, most preferably as represented by SEQ ID NO: 1 or 3 or a portion thereof or sequences capable of hybridising therewith, or a nucleic acid sequence encoding an amino acid sequence represented by SEQ ID NO: 2 or 4 or a homologue, such as a homologue having at least, 47%, 48%, 49%, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95% 98%, 99% sequence identity with SEQ ID NO 2, or a derivative or active fragment thereof.
23. Genetic construct according to claim 21 or 22, wherein said control sequence is a constitutive promoter or at least a part thereof.
24. Plant or plant part comprising a genetic construct according to any of claims 21 to 23, which plant or plant part has changed development.
25. Use of a *cdc27a* nucleic acid sequence and/or CDC27A protein or a homologue, derivative or active fragment thereof, for changing development of a plant.
26. Use of a *cdc27a* nucleic acid sequence and/or CDC27A protein or a homologue, derivative or active fragment thereof, derivative or active fragment thereof, for changing plant differentiation.
27. Use of a *cdc27a* nucleic acid sequence and/or CDC27A protein or a homologue, derivative or active fragment thereof, for accelerating or delaying plant development, organ formation and/or differentiation.
28. Use of a *cdc27a* nucleic acid sequence and/or CDC27A protein or a homologue, derivative or active fragment thereof, for increasing or decreasing organ size and/or number
29. Use of a *cdc27a* nucleic acid sequence and/or CDC27A protein or a homologue, derivative or active fragment thereof, for changing reproductive characteristics, such as early flowering or late flowering.
30. A food product derived from a plant or plant part according to any of claims 17 to 20 or claim 24.

31. Use of a product derived from a plant or plant part according to any of the claims 17 to 20 or claim 24 in animal feed and food.

5 32. Use of a plant or plant parts according to any of claims 17 to 20 or claim 24, for the production of enzymes and pharmaceuticals.

33. Industrial enzymes and pharmaceuticals produced by using a plant or plant part according to claim 32.

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